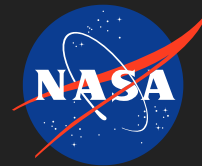


A Wide-Temperature Range Wire-Line Communication Link Using the NASA Glenn SiC JFET Technology, Phase I

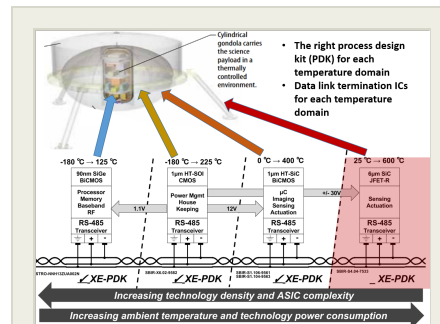
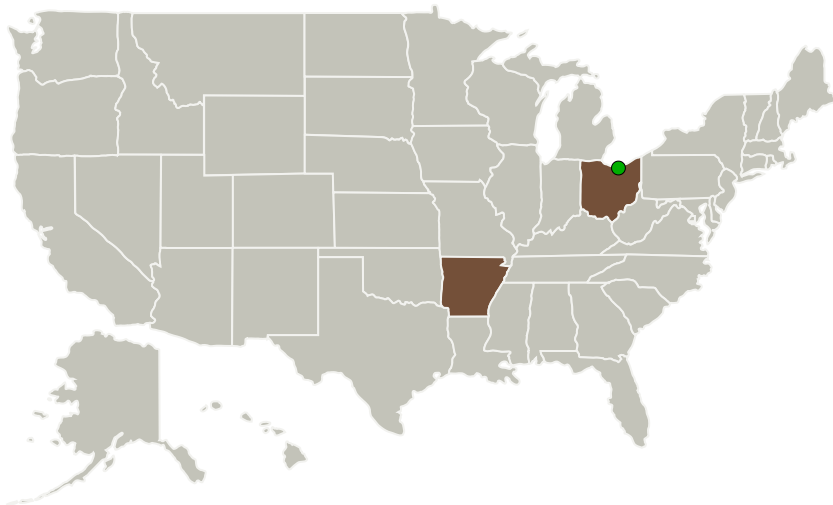
Completed Technology Project (2016 - 2016)



Project Introduction

NASA has demonstrated a resolve for a flagship mission in the coming years to revisit Venus and land instruments on the surface. Venus has a corrosive, high pressure (~100 bar), high-temperature (up to 500 C) environment presenting extreme design challenges for lander electronics. The ability to establish simple wire-line communications between circuits operating in extremely disparate temperature domains is a critical need. Different technologies have specific strengths (complexity, density, area, power) which span from high-performance, lower-temperature silicon to medium-density SiC-CMOS and lower-density, high-reliability SiC JFET-R. A viable lander design requires applying the right technology to each temperature domain. The premier IC process for ultra-high temperatures is the SiC JFET technology developed at NASA Glenn Research Center (GRC). In Phase I, Ozark IC proposes to use its extensive high temperature device and circuit expertise to create a PDK for the GRC SiC JFET process. Pre-existing designs by NASA will be recaptured with the PDK and simulation results will be validated against measured data. An RS-485 transceiver circuit will be designed using the PDK and verified such that it is ready for fabrication at the conclusion of Phase I.

Primary U.S. Work Locations and Key Partners



A wide-temperature range wire-line communication link using the NASA Glenn SiC JFET technology, Phase I

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Organizations Performing Work	Role	Type	Location
Ozark Integrated Circuits, Inc.	Lead Organization	Industry	Fayetteville, Arkansas
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Arkansas	Ohio

Project Transitions

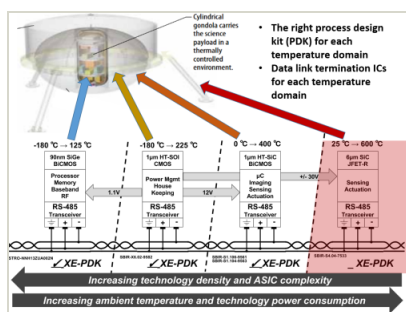
▶ **June 2016:** Project Start

✔ **December 2016:** Closed out

Closeout Documentation:

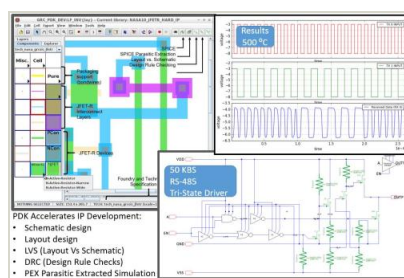
- Final Summary Chart(<https://techport.nasa.gov/file/139698>)

Images



Briefing Chart Image

A wide-temperature range wire-line communication link using the NASA Glenn SiC JFET technology, Phase I (<https://techport.nasa.gov/image/133908>)



Final Summary Chart Image

A wide-temperature range wire-line communication link using the NASA Glenn SiC JFET technology, Phase I Project Image (<https://techport.nasa.gov/image/128820>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Ozark Integrated Circuits, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

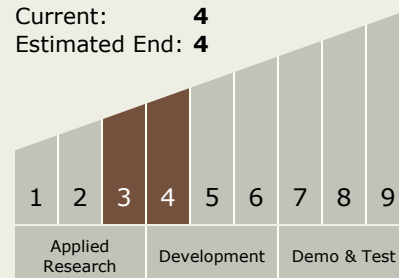
Carlos Torrez

Principal Investigator:

James A Holmes

Technology Maturity (TRL)

Start: 3
Current: 4
Estimated End: 4



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Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.3 In-Situ Instruments and Sensors
 - └ TX08.3.4 Environment Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System